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ABSTRACT

The Education Improvement Act of 1984 established the half-day child development program in South Carolina for 4- year-olds to help children who were most at risk for school failure get ready to learn before they entered the first grade. Students in the program met from 2 to 2.5 hours per day and used the High/Scope Preschool Curriculum. Each classroom was staffed with a teacher certified in early childhood education and one assistant, serving up to 20 children. This study used longitudinal data to determine whether students in the 1997-98 half-day child development program were equally ready for the first grade when compared with randomly sampled, similar South Carolina students and whether the program had differential effects upon school readiness for different groups of children. Findings indicated that the program had a positive effect in reducing the degree of risk for student readiness at the first grade. Program participants had a level of school readiness equivalent to that of nonprogram students. Significantly more females and Hispanic students in the 4-year-old program scored ready for the first grade than did the females and Hispanic students who were not in the program. Recommendations based on screening findings include refining the guidelines for identifying at-risk students, using student demographic information to better identify variables responsible to early intervention, placing students in different types of programs based on screening results, and investigating instructional curricula and strategies to determine their effect on improving school readiness. (Appendices include information on statistical analyses, data tables, school readiness trend comparisons between program and nonprogram participants, and comparisons across gender, ethnic groups, and family income groups.) (KB)

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A Longitudinal Research Report on the Early Childhood Development Program

The Half-Day Child Development Program for Four-Year-Olds, 1997–98

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A Longitudinal Research Report on the Early Childhood Development Program

The Half-Day Child Development Program for Four-Year-Olds, 1997–98

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Abstract

The Education Improvement Act (EIA) of 1984 established the half-day child development program for four-year-olds to help children who are most at risk for school failure get ready to learn before they enter the first grade. Students in the program met from two to two and a half hours per day and used the High/Scope Preschool Curriculum (see Hohmann, Banet, and Weikart 1979), a cognitive developmental curriculum used widely in the nation for many years. Each classroom was staffed with a teacher certified in early childhood education and one assistant and served up to twenty children.

In compliance with the Early Childhood Development and Academic Assistance Act of 1993 (Act 135), the State Department of Education's Office of Research conducted the present study. Longitudinal data were utilized to determine the effects of the child development program on the later achievement of children. This longitudinal study was done by tracking the program participants to the fall of their first year of elementary school to examine their performance on school readiness tests. An assessment of program impact was made through the comparison of program and nonprogram participants. Data for this study were obtained from the Office of Research's 1997–98 four-year-olds survey and the Department's Cognitive Skills Assessment Battery (CSAB) results for the 1999–2000 school year. Due to the limitations imposed by ethical and practical considerations, individuals were not randomly assigned to treatment groups. Therefore, this study employed a quasi-experimental design rather than a true experimental design.

The report addressed four questions: (1) What are the features of the 1997–98 half-day child development program for four-year-olds as compared with those of previous years? (2) How do program and nonprogram students differ from one another with respect to demographics? (3) Is there a difference between program students and nonprogram students in the level of school readiness at grade one as measured by the CSAB? (4) Does program participation result in differential effects for children based on gender, ethnicity, family income/lunch status, and/or their mothers' educational levels?

Results of the data analysis indicate that the program had a positive effect in reducing the degree of risk for student readiness at the first grade. Program participants were children whose developmental indicators—including their families' economic and educational backgrounds—placed them at risk academically. In spite of their risk levels, the program participants had a level of school readiness equivalent to that of nonprogram students. The study also reveals that certain groups of program students scored significantly higher on the CSAB than nonprogram students. In particular, significantly more females and Hispanic students in the four-year-old program scored ready for the first grade than did the females and Hispanic students who were not in the program.

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The Half-Day Child Development Program for Four-Year-Olds: Characteristics of Programs, Participants, and Academic Achievement of the 1997–98 Class through Their First-Grade Year

Introduction

Ensuring that children start school ready to learn is vitally important to the nation. However, a significant number of the children entering elementary school are not ready to learn in their classrooms. Rima Shore's report on school readiness states that between 10 and 30 percent of students nationwide are not ready for the first grade (Shore 1998, 2). In the 1999–2000 school year, 16.1 percent of school-aged children were deemed "not ready" to learn in the South Carolina public schools (*CSAB Data Update*).

To improve public education, the South Carolina State Board of Education initiated a plan to help children get ready to learn before they enter first grade. In accordance with provisions in the Education Improvement Act of 1984 and the Early Childhood Development and Academic Assistance Act (Act 135) of 1993, school districts were required to establish and provide for at least one half-day early childhood development program for four-year-old children. The EIA half-day child development program provided an early positive intervention for children predicted to be significantly deficient in school readiness. Students in the program met from two to two and a half hours per day and used the High/Scope Preschool Curriculum (see Hohmann, Banet, and Weikart 1979), a national cognitive developmental curriculum used widely for many years. Each classroom was staffed with a teacher certified in early childhood education and one assistant and served up to twenty children. During the pilot year of 1983–84, eighteen South Carolina school districts with 1,050 children participated in the half-day child development program. By the 1997–98 school year, half-day child development programs for four-year-olds had increased tenfold, serving 10,114 students in eighty-one school districts.

School districts are required to actively recruit those children with the greatest degree of academic risk. Recruitment efforts should include direct contact with parents and publication of program availability. Selection criteria for enrollment in a half-day child development program requires the administration of a screening instrument to determine the child's developmental level. This information is used for determining appropriate instructional strategies and resources. The Developmental Indicators for the Assessment of Learning-Revised (DIAL-R) was used across most school districts in the State.* Additional demographic information (i.e., parental income and mother's educational level) was collected from all program participants for longitudinal evaluation of program effectiveness.

Previous assessments of the EIA half-day child development program suggested that it had a positive effect on the level of school readiness as measured by the CSAB. At grade one, program students eligible for free and reduced-price lunch were faring as well as comparable groups of students who were not considered at risk academically. Differences in the percentage of children assessed ready for school favored students in the half-day child development program, though the percentages were too small to reach statistical significance.

The present study assesses whether students in the 1997–98 half-day child development program were equally ready for the first grade when compared with randomly sampled, similar South Carolina students and whether the program had differential effects upon school readiness for different groups of children.

* Since South Carolina law does not mandate the use of any one specific instrument, several other diagnostic instruments, including the Brigance Preschool Screen and the Learning Accomplishment Profile-Diagnostic (LAP-D) assessment, were used. Five school districts were excluded from the analysis for this report because they were not using the DIAL-R.

Part I

Design and Methodology

This section of the report describes the evaluation design, sampling procedures, data collection, and data analysis. It also includes the research questions that the study was designed to investigate.

Research Design

In designing evaluation studies in education, the researcher faces limitations that are imposed by ethical and practical considerations. In the present study, individuals were not randomly assigned to treatment groups. Therefore, this study employed a quasi-experimental design rather than a true experimental design. A second limitation is the selection of the comparison group. The treatment group consisted of participants from the EIA half-day child development program who were considered to be at higher levels of educational and economic risk. An equivalent comparison group could not be readily drawn from the student population of the same age. To increase the level of internal and external validity, this study utilized only students who were eligible for free school meals (a proxy for family income) through the National School Lunch Program in both treatment and comparison groups. In addition, program effects were examined for various demographic subgroups of program participants. Future studies will follow matched-case students through grade three.

Population and Sample

The population consisted of all the participants in the South Carolina EIA half-day child development program for four-year-olds in the 1997–98 school year. Of those, 10,114 program participants had complete records and were followed up to the first grade. They were used to investigate the program characteristics and to conduct disaggregated comparisons among program participants. To investigate the differences in school readiness between program and nonprogram students at grade one, the present analysis selected 5,323 program participants eligible for free school meals and a comparison group of 4,378 students randomly sampled from nonprogram students who were also eligible for free school meals. Because program students at high risk were generally characterized by low socioeconomic status, selecting both treatment and comparison subjects from among students eligible for free meals is logical. However, since students in half-day child development programs generally exhibit a higher level of academic risk in demographic factors beyond family income, the control attempted here is less than perfect.

Data Collection

Data for this study were obtained from two sources: the CSAB and the 1997–98 edition of the annual survey that the Department of Education's Office of Research conducts of all schools and students participating in the EIA program for four-year-olds. During the 1997–98 school year, data from 434 half-day child development programs in eighty-one school districts were obtained from scannable forms submitted to the Office of Research by teachers in the programs. Matched-case data were obtained for students in half-day child development programs during 1997–98 and in grade one during 1999–2000.

A three-phase matching process was utilized. In phase one, all participants in the child development programs for four-year-olds in 1997–98 were computer-matched with 1999–2000 CSAB readiness test data using the variables of name, race, gender, and date of birth. The electronic matching resulted in 10,156 records (77 percent of the students in the child development program). Phase two involved visually inspecting and hand-matching those students for whom no computer match was possible. These two procedures resulted in 11,578 records (88 percent of the 1997–98 child development program participants matched to the 1999–2000 CSAB data). Phase three selected only the 10,114 students who participated in half-day programs for the current study (excluding those from full-day programs).*

Data Analysis

The CSAB test scores for the 1999–2000 school year were used to determine whether the participants in the 1997–98 half-day child development program reached the readiness standard when they entered grade one. A total CSAB raw score of 88 or greater was used as the benchmark for school readiness. The comparisons were conducted between treatments (program, nonprogram) and within the program treatment by gender, race, student meal status, and mothers' educational levels. Additional information regarding the statistical analyses employed may be found in appendix 1.

* The child development programs for four-year-olds include half-day, half-day extended, and full-day classes, although the majority are half-day. Because Act 135 mandated implementation of the requirement in Section 59-5-65(8) of the South Carolina Code of Laws that "all school districts . . . provide at least one-half day early childhood development programs for four-year-old children who have predicted significant readiness deficiencies and whose parents voluntarily allow participation," this study used participants in half-day programs only.

Part II

Results

This section of the report details the results of the 1997–98 half-day child development program by describing its participants in terms of their school readiness at grade one. Presented are the comparisons between the program and nonprogram participants in the levels of school readiness and comparisons among various demographic groups within the program in the levels of school readiness.

Research Questions and Results

1. *What are the features of the 1997–98 half-day child development program for four-year-olds as compared with those of the 1995–96 and 1996–97 programs?*

   The number of half-day child development programs increased by 57 percentage points, from 277 in 1995–96 to 434 in 1997–98. The number of students served by the programs increased 25 percentage points, from 8,070 in 1995–96 to 10,114 students in 1997–98. Other program characteristics, such as teacher training and parent involvement activities, also changed as the program matured. A summary of program characteristics is presented in table 1.

TABLE 1

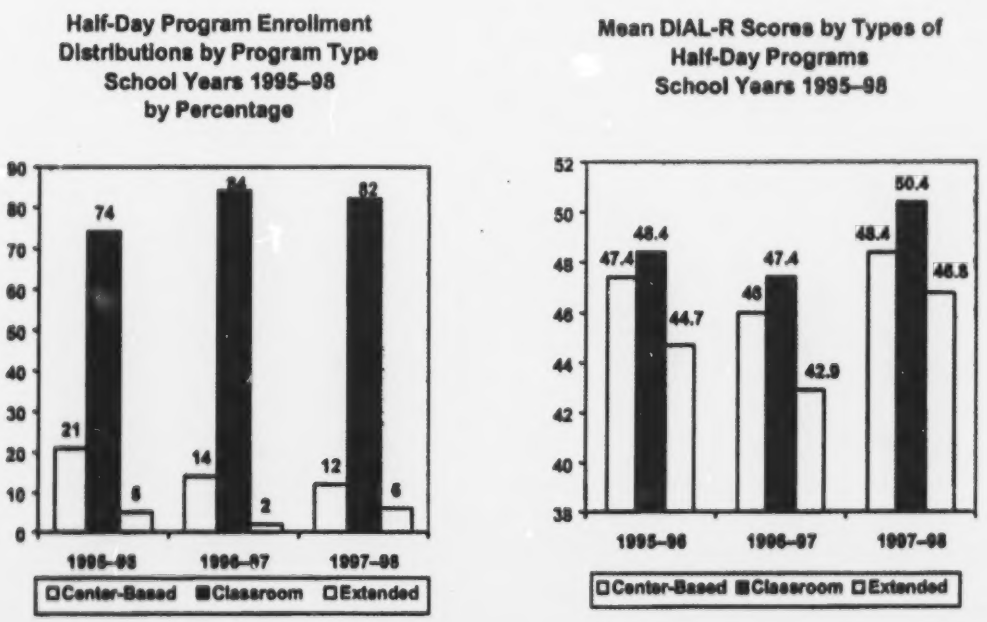
Characteristics of the Half-Day Child Development Programs in South Carolina School Years 1995–96 through 1997–98

Program characteristics, activity frequency during the school year	1995–96	1996–97	1997–98
High/Scope curriculum utilized	93.5%	91.1%	88.9%
Home visits, two or more times	96.0%	95.1%	93.5%
Parent conferences, three or more times	91.4%	88.5%	88.7%
Open house, two or more times	95.1%	98.0%	98.6%
Teacher training activities, two or more times	99.6%	89.1%	97.9%
Teacher training activities, five or more times	46.0%	50.8%	56.1%
Assistant training activities, two or more times	90.0%	85.8%	90.0%
Assistant training activities, five or more times	18.8%	22.7%	24.7%

The percentage of programs using the High/Scope curriculum decreased by 4.6 percentage points in three years (93.5 percent, 91.1 percent, and 88.9 percent respectively). This decrease results from the introduction of several new curriculum models for early childhood education (i.e., Creative Curriculum, Project Approach, Montessori). Slightly fewer programs conducted home visits at least twice a year (96.0 percent in 1995–96 compared with 93.5 percent in 1997–98). Similarly, the percentage of programs holding parent conferences more than three times during the school year declined by 2.7 percentage points (91.4 percent in 1995–96, 88.7 percent in 1997–98). However, the percentage of schools conducting open house two times or more increased by 3.5 percentage points (95.1 percent in 1995–96, 98.6 percent in 1997–98). Also noteworthy is the increase of 10.1 percentage points in the number of schools that sent teachers for training over five times a year (46.0 percent in 1995–96), 56.1 percent in 1997–98). Following this trend, more schools sent assistants to training over five times a year (18.8 percent in 1995–96, 24.7 percent in 1997–98).

To gain additional perspectives of the program characteristics, half-day programs enrollment distributions and mean DIAL-R scores across three types of half-day programs were analyzed for the school years 1995–96 through 1997–98. Figure 1 presents the results.

Figure 1



Note: **Center-based** half-day programs are sponsored independently of schools. Half-day **classroom** programs are sponsored by schools. Half-day **extended** school-sponsored programs go beyond two to two and a half hours per day.

Among the key findings are the following:

- Most students in half-day programs are enrolled in classroom programs. In addition, the percentage of students enrolled in half-day classroom programs has increased. In the 1995–96 academic year, 74 percent of half-day program students were enrolled in the classroom program, while 21 percent were enrolled in the center-based program and 5 percent in the half-day extended program. By 1997–98, the percentage of students enrolled in the half-day classroom program had increased to 82 percent, and the percentage of students enrolled in the half-day extended program had increased to 6 percent, while the percentage of students enrolled in the center-based program had declined to 12 percent.

- When entering the program, the participants were measured with the DIAL-R, a developmental screening instrument for school readiness. Mean DIAL-R scores for students in all types of programs increased from the 1995–96 and 1996–97 program years. In addition, students enrolled in half-day classroom programs had the highest mean score all three years (48.4, 47.4, and 50.4 respectively). The mean score for children in the national sample ranged from 52 to 62 (Mardell-Czudnowski and Goldenberg 1983, 74).

2. *How do program and nonprogram students differ with respect to demographics?*

Demographic characteristics of program participants differ from those of nonprogram South Carolina students of the same age. African-American students and students qualifying for free school lunch were overrepresented in the program by 14.9 percent and 11.4 percent respectively. Similarly, there were more Caucasian and fully paid–lunch students in the nonprogram sample. Table 2 describes the demographic features of the program students compared with typical South Carolina students of the same age. Figure 2 presents the most notable of these differences.

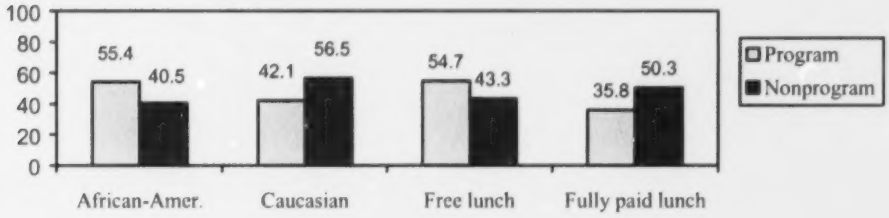
TABLE 2

Demographic Distribution of Program and Nonprogram Students at Grade One School Year 1999–2000

Demographic Characteristics		Program Students	Nonprogram Students (.25 sampling)
Gender	Female	48.6%	47.6%
	Male	51.4%	52.3%
Race	Asian	0.8%	0.9%
	African-American	55.4%	40.5%
	American Indian	0.4%	0.2%
	Hispanic	1.4%	1.8%
	Caucasian	42.1%	56.5%
Lunch	Free lunch	54.7%	43.3%
	Reduced-price lunch	9.5%	6.4%
	Fully paid lunch	35.8%	50.3%
Number		**10,114**	**10,616**

Figure 2

Most Notable Demographic Differences between Program and Nonprogram Students at Grade One School Year 1999–2000



3. *Is there a difference in the level of school readiness between program students and nonprogram students at grade one as measured by the CSAB?*

Because half-day child development programs include a disproportionate number of students with low scores on the DIAL-R, a comparison between these students and nonprogram students may be misleading. In an effort to control the academic risk variable at least partially, the analysis of program effects includes only those students eligible for free school meals. Table 3 presents the demographic features of the samples used to answer the above question.

TABLE 3

Samples of Grade One Program and Nonprogram Participants Matched on School Lunch Status School Year 1999–2000

Demographic Characteristics		Half-Day Program	Nonprogram (Randomly Selected)
Gender	Female	49.3%	47.2%
	Male	50.7%	52.7%
Race	Asian	0.4%	0.5%
	African-American	72.9%	69.0%
	American Indian	0.1%	0.4%
	Hispanic	1.6%	2.4%
	Caucasian	25.0%	27.7%
Lunch	Free-lunch	100.0%	100.0%
Number		**5,323**	**4,378**

Note: Data were missing for race and gender for a few students.

Table 4 compares the school readiness of students in the two groups as measured by the CSAB. More students who participated in the half-day child development program scored ready at first grade than students who did not participate in the program. Though the difference favored the program students, it was not large enough to reach significance. However, due to the fact that the program participants were selected because they were especially at risk, their performance compared with the randomly selected free lunch students suggests that the program had a positive impact upon student performance. (For statistical analysis results, see appendix 1, research question 3.)

TABLE 4

School Readiness Comparison of Program and Nonprogram Students School Year 1999–2000

Readiness Status Measured by the CSAB	Program Students	Nonprogram Students
Ready	76.5%	74.9%
Not ready	23.5%	25.1%

3.1. *Is there a difference in the level of school readiness between males in the program and males not in the program?*

While males in the program scored slightly higher in readiness (by 0.4 percentage points) than males who did not participate (see table 5), the difference is not large enough to be statistically significant. (For statistical analysis results, see appendix 1, research question 3.1.)

TABLE 5

School Readiness Comparison of Program Males and Nonprogram Males School Year 1999–2000

Readiness Status as Measured by the CSAB	Program Males (n=2,700)	Nonprogram Males (n=2,298)
Ready	72.8%	72.4%
Not ready	27.2%	27.6%

3.2. *Is there a school readiness difference between females in the program and females not in the program?*

As indicated in table 6, below, female program participants had a higher (by 2.6 percentage points) level of readiness than female nonparticipants. The difference is statistically significant. (For statistical analysis results, see appendix 1, research question 3.2.)

TABLE 6

School Readiness Comparison of Program Females and Nonprogram Females School Year 1999–2000

School Readiness Status	Program Females (n=2,623)	Nonprogram Females (n=2,058)
Ready	80.4%	77.8%
Not ready	19.6%	22.2%

3.3. *Is there a difference in the level of school readiness among racial groups of program participants and nonparticipants?*

Table 7 presents readiness differences by racial group. While three of the five comparisons favor program students, only the Hispanic differences are large enough to reach statistical significance. (For statistical analysis results, see appendix 1, research question 3.3.)

TABLE 7

School Readiness Comparison of Program and Nonprogram Students by Racial Groups School Year 1999–2000

Racial Group	Program	Nonprogram
African-American (n_p=3877, n_{np}=3014)	75.3%	73.6%
Asian (n_p=19, n_{np}=23)	79.0%	82.6%
American Indian (n_p=7, n_{np}=17)	85.7%	70.6%
Hispanic (n_p=83, n_{np}=106)	78.3%	53.8%
Caucasian (n_p=1328, n_{np}=1209)	80.1%	80.2%

3.4. *Is there a difference in the level of school readiness between program participants who were in full-day kindergarten and nonprogram participants who have had the same experience?*

More program participants who had a full-day kindergarten experience (1.7 percentage points) scored ready for first grade (76.7 percent) than nonprogram participants who had had the same experience (75.0 percent). While the difference favors the program students, it is not large enough to be statistically significant. (For statistical analysis results, see appendix 1, research question 3.4.)

TABLE 8

School Readiness Comparison of Program and Nonprogram Students Who Were in Full-Day Kindergarten School Year 1999–2000

School Readiness Status	Program (n=5,184)	Nonprogram (n=4,163)
Ready	76.7%	75.0%
Not ready	23.3%	25.0%

Questions 4.1 to 4.4 are based on *all* four-year-old program participants.

4.1. *Does the program differentially affect the level of school readiness for students from different racial groups?*

Table 9 shows that the percent of students assessed "ready" varies significantly between racial groups. The percentages ready for school range from a low of 77.7 percent among African-American students to a high of 86.9 percent among Caucasian students. (For statistical analysis results, see appendix 1, research question 4.1.)

TABLE 9

School Readiness Status for All Program Participants by Race School Year 1999–2000

School Readiness Status	Asian	African-American	Hispanic	American Indian	Caucasian
Ready	86.8%	77.7%	84.5%	80.6%	86.9%
Not ready	13.2%	22.3%	15.5%	19.4%	13.1%

4.2. *Does the program differentially affect the level of school readiness for males and females?*

Among program participants, more females (84.7 percent) than males (78.9 percent) were ready to learn at grade one. This difference is statistically significant and agrees with previous studies that indicate that male students lag behind females in the early grades. Table 10 presents the gender differences from this study. (For statistical analysis results, see appendix 1, research question 4.2.)

TABLE 10

School Readiness Status for All Program Participants by Gender School Year 1999–2000

School Readiness Status	Program Females	Program Males
Ready	84.7%	78.9%
Not ready	15.3%	21.1%

4.3. *Does the program differentially affect the level of school readiness for students from different family income levels?*

Table 11 suggests that family income is related to the level of student readiness as measured by the CSAB. Program students not qualifying for free or reduced-price school meals scored 12.3 percentage points higher than program students qualifying for free school meals. This difference is statistically significant. (For statistical analysis results, see appendix 1, research question 4.3.)

TABLE 11

School Readiness Status for All Program Participants by Family Income/Lunch Status School Year 1999–2000

School Readiness Status	Free Lunch	Reduced-Price Lunch	Full-Price Lunch
Ready	76.5%	85.0%	88.8%
Not ready	23.5%	15.0%	11.2%

4.4. *Does the program differentially affect the level of school readiness of students whose mothers vary in educational levels?*

The data in table 12 indicate that as the levels of mothers' education increase, the percentage of students ready for grade one consistently increases. These data are consistent with the differences found in school readiness status by family income data, as cited previously. (For statistical analysis results, see appendix 1, research question 4.4.)

TABLE 12

School Readiness Status for All Program Participants by Mothers' Educational Levels School Year 1999–2000

Children's School Readiness Status	Mothers Completed Grades 1–8	Mothers Completed Grades 9–11	Mothers Are High School Graduates	Mothers Have Some College	Mothers Are College Graduates	Mothers Have Postcollege Education
Ready	76.8%	76.4%	81.5%	86.0%	89.8%	89.8%
Not ready	23.2%	23.6%	18.5%	14.0%	10.2%	10.2%

Part III

Conclusions

This study examined the characteristics of participants in the 1997–98 class of the half-day child development program for four-year-olds. It compared the differences in school readiness between program and nonprogram students eligible for free school meals. Program outcomes on different groups of students were also investigated. By definition, the majority of program participants were children whose developmental indicators—including their families' economic and educational backgrounds—placed them at risk academically. In spite of their risk levels, the program participants had a level of school readiness equivalent to that of nonprogram students. More specifically, significantly more female program students than nonprogram female students were assessed as "ready." When compared by racial groups, more program students of Hispanic origin were ready for the first grade than those nonprogram students of the same race. Among the students in the program, females performed better than males, Asian and Caucasian students outperformed other ethnic groups, students paying for school meals scored higher than those eligible for free school meals, and more students whose mothers have higher educational levels were assessed as ready at grade one.

The following recommendations are based upon the study results:

- The guidelines for identifying students at risk need to be refined to include additional factors predictive of early school failure (e.g., family income and mother's educational level). These will better target students at risk.

- Student demographic information should be utilized to conduct a detailed analysis of variables responsive to early intervention. These demographic factors may then be further used to select students for the child development program.

- Students should be placed in different types of child development programs based on the results of developmental screening instruments.

- Instructional strategies and curricula should be further investigated to determine their effects on improving school readiness for at-risk populations.

- A detailed analysis of teacher experience levels and certification, staff development offerings, and child development program type and length should be conducted to determine the key components of successful programs. For example, comparisons should be made between students participating in half-day child development programs and those participating in full-day programs.

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Appendix 1

Statistical Analyses

Chi-square tests were computed for research questions 3 and 4 to determine whether or not a significant relationship exists between and within treatment status and students' school readiness performance on the CSAB. Alpha was set at 0.05. For additional details regarding the statistical analysis, contact the Office of Research, Division of Curriculum Services and Assessment, South Carolina Department of Education.

Research question 3.

Hypothesis: *There is no difference in school readiness between program students and nonprogram students at grade one as measured by the CSAB.*

The hypothesis was not rejected. A chi-square value of 3.419 was found. Program participants performed better on school readiness tests than did nonprogram participants, at a 0.064 probability level. This difference fails to reach the .05 alpha level.

Research question 3.1.

Hypothesis: *There is no school readiness difference between males in the program and males not in the program.*

The hypothesis was not rejected. The difference is too small to reach statistical significance. A chi-square value of 0.125 at an alpha level of 0.724 was found.

Research question 3.2.

Hypothesis: *There is no school readiness difference between females in the program and females not in the program.*

The hypothesis was rejected. A chi-square value of 4.637 was found at 0.03 alpha level. Significantly more females in the program scored ready for the first grade than females who were not program participants.

Research question 3.3.

Hypothesis: *There are no school readiness differences among racial groups of program participants and nonparticipants.*

The hypotheses were not rejected in the tests for differences between treatment and comparison groups among Caucasian and African-American children. The chi-square values are 0.004 (Caucasian) and 2.684 (African-American). The hypothesis that there are no school readiness differences between program and nonprogram Hispanic students was rejected at the chi-square value of 12.25 at .001 alpha level. Significantly more program Hispanic students than nonprogram students scored "ready" on the CSAB. When chi-square tests were conducted among Asian and American Indian students for differences between treatment and comparison groups, more than 25 percent of the cells had expected values less than 5, and therefore the chi-square tests may not be valid.

Research question 3.4.

Hypothesis: *There is no school readiness difference between program participants who have had full-day kindergarten experience and nonprogram participants who have had the same experience.*

The hypothesis was not rejected in the test for differences between treatment and comparison groups. The chi-square value was 3.631 at an alpha level of .057. While the difference slightly favors the treatment group, it is too small to reach statistical significance.

Research question 4.1.

Hypothesis: *There are no school readiness differences among racial groups of program participants.*

The hypothesis was rejected at a chi-square value of 139.008 at the alpha level of .001. In the program, percentages of students "ready" was significantly related to ethnicity.

Research question 4.2.

Hypothesis: *There is no school readiness difference between male and female program participants.*

The hypothesis was rejected. A chi-square value of 56.326 was found at the alpha level of .001. Significantly more female than male program participants scored "ready" on the CSAB.

Research question 4.3.

Hypothesis: *There is no school readiness difference between students qualifying for free school meals and those not qualifying for either free or reduced-price school meals.*

The hypothesis was rejected. A chi-square value of 219.147 at .001 alpha level was found. Percentages of students "ready" was significantly related to school lunch status (a proxy for family income).

Research question 4.4.

Hypothesis: *There are no school readiness differences among students whose mothers vary in educational levels.*

The hypothesis was rejected. A chi-square value of 86.126 at .001 alpha level was found. Within this study, the higher the educational level of the mother, the higher the student's CSAB performance.

Appendix 2

School Readiness Measured by the CSAB in South Carolina Public Schools by Percentage

Fall 1980 to Fall 1999

School Year	Total % Ready	Males	Females	African-Amer.	Caucasian	Asian	Hispanic	Amer. Indian
1999	83.9	81.4	86.5	77.4	89.8	81.2	65.2	77.6
1998	81.2	78.3	84.3	74.1	87.7	77.8	58.5	70.0
1997	79.6	76.5	82.9	71.7	86.5	80.9	59.0	70.5
1996	75.8	72.5	79.5	65.9	84.0	72.6	61.7	66.2
1995	71.9	68.2	75.8	60.6	81.3	77.2	53.3	65.2
1994	71.5	67.8	75.4	60.0	80.8	73.0	58.5	59.2
1993	72.2	68.8	75.9	60.5	81.4	77.3	59.4	55.6
1992	72.5	69.1	76.2	60.5	81.9	72.8	56.6	66.1
1991	73.4	69.8	77.2	61.6	82.4	75.2	61.2	63.2
1990	73.2	70.0	76.7	61.2	82.7	74.5	64.1	62.5
1989	74.4	71.4	77.7	63.1	83.5	78.1	62.6	66.7
1988	74.8	71.6	78.3	63.7	84.0	78.1	61.7	67.8
1987	75.2	72.2	78.3	64.5	84.1	77.9	67.2	75.0
1986	74.5	71.8	77.5	63.6	83.7	73.8	69.4	60.7
1985	74.2	71.5	77.2	62.9	83.8	81.3	67.4	66.0
1984	72.4	69.6	75.5	60.9	82.5	68.3	68.3	60.0
1983	72.6	69.6	75.8	60.4	82.7	77.5	73.1	56.6
1982	70.8	67.4	74.5	58.0	81.2	74.7	61.6	60.7
1981	68.1	65.2	71.3	54.9	79.1	74.4	67.7	35.9
1980	63.7	59.6	68.1	49.6	74.8	67.3	53.0	46.3

Source: *Cognitive Skills Assessment Battery Data Update*

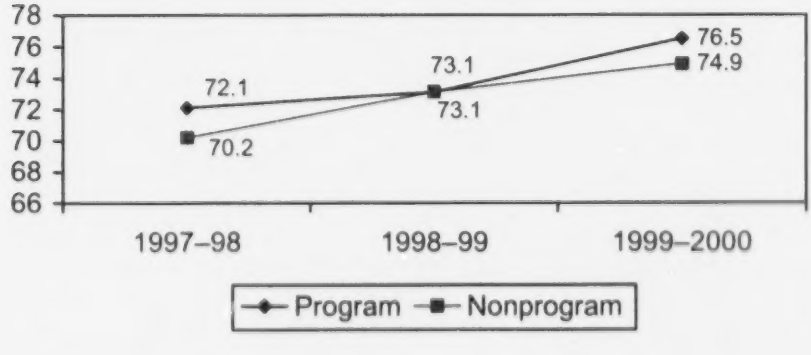
Appendix 3

School Readiness Trend Comparisons between Program and Nonprogram Participants School Years 1997–98 through 1999–2000

Background: The following charts compare performance trends across three years on school readiness status between children who participated in the half-day child development program for four-year-olds and those who did not. Data are from the 1997–98, 1998–99, and 1999-2000 analysis of CSAB results for program and nonprogram participants. Since the participants in the EIA half-day child development program were considered to be at higher levels of educational risk, an equivalent comparison group could not be readily drawn from the student population at the same age. To increase the validity for the comparison, only students who were eligible for **free school meals** (a proxy for family income) through the National School Lunch Program in both program and nonprogram groups were utilized. The nonprogram students were selected through random sampling.

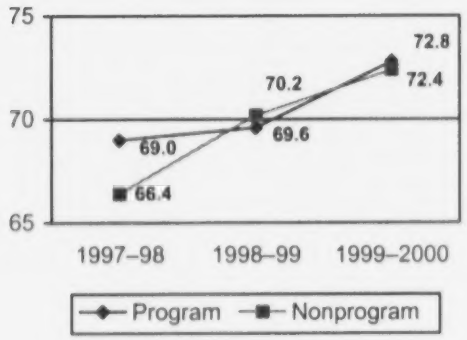
	1997–98	1998–99	1999–2000
Program	3,783	4,420	5,323
Nonprogram	4,452	4,567	4,378

Percentage of Students Ready at First Grade Program and Nonprogram Participants School Years 1997–98 through 1999–2000

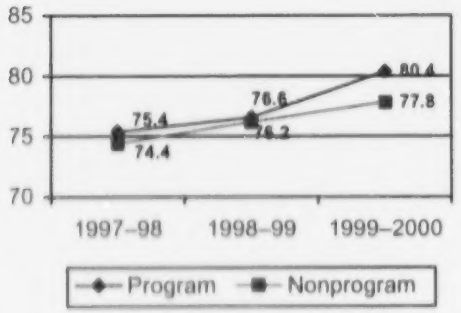


GENDER

Percentage of Students Ready at First Grade Program and Nonprogram Males School Years 1997–98 through 1999–2000

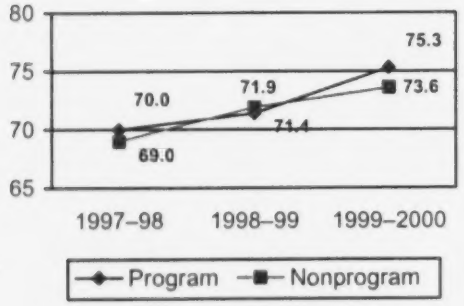


Percentage of Students Ready at First Grade Program and Nonprogram Females School Years 1997–98 through 1999–2000

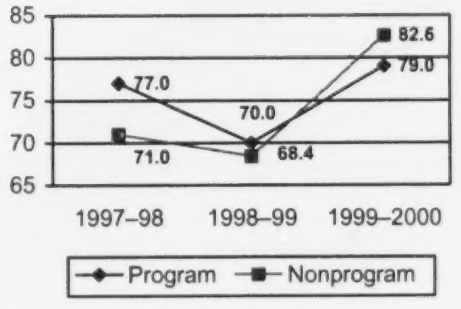


ETHNICITY

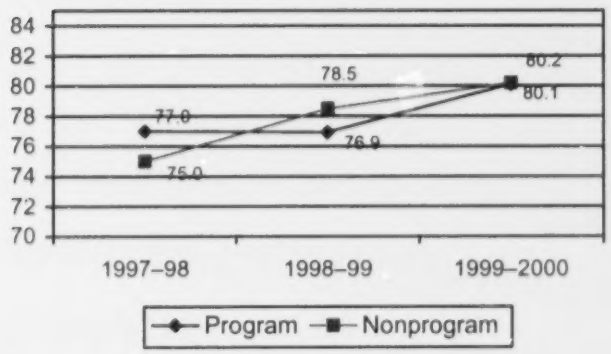
Percentage of Students Ready at First Grade Program and Nonprogram African-American School Years 1997–98 through 1999–2000



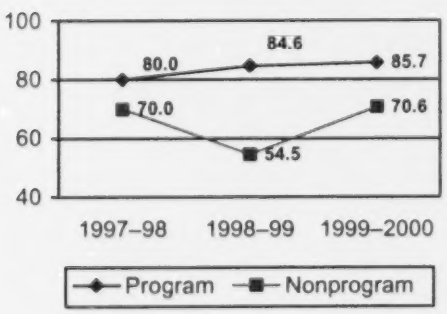
Percentage of Students Ready at First Grade Program and Nonprogram Asian School Years 1997–98 through 1999–2000



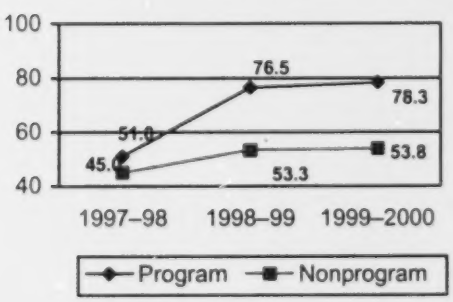
Percentage of Students Ready at First Grade Program and Nonprogram Caucasian School Years 1997–98 through 1999–2000



Percentage of Students Ready at First Grade Program and Nonprogram American Indian School Years 1997–98 through 1999–2000



Percentage of Students Ready at First Grade Program and Nonprogram Hispanic School Years 1997–98 through 1999–2000



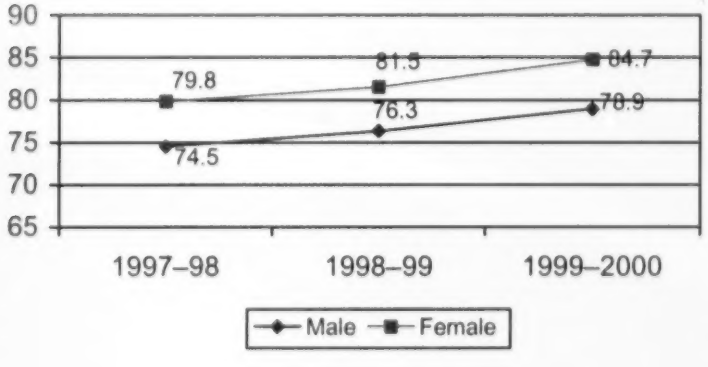
Appendix 4

School Readiness Trend Comparisons among Program Participants, Disaggregated School Years 1997–98 through 1999–2000

Background: The following charts compare the disaggregated performance trends across three years for the school readiness status of the four-year-old half-day development program participants. The percentages for school readiness were based on the number of program students who were matched with CSAB results at grade one in 1997–98 (6,286), 1998–99

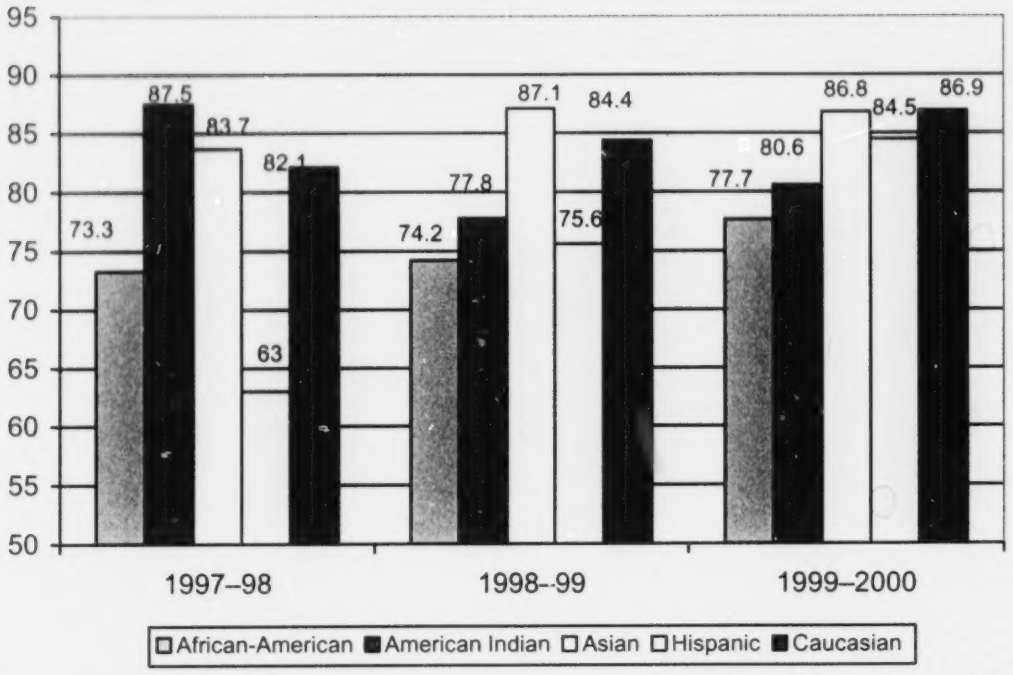
GENDER

Percentage of Program Participants Ready at First Grade by Gender School Years 1997–98 through 1999–2000



ETHNICITY

Percentage of Program Participants
Ready at First Grade
by Ethnicity
School Years 1997–98 through 1999–2000



Percentage of Program Participants Ready at First Grade by Family Income/Lunch Status School Years 1997–98 through 1999–2000